

Planned nuclear power builds in Europe

Are they financially feasible

in the nearest to mid-term future?

Overview of major debated financing models

and

introductory remarks

to feed in the panel discussion

Nuclear Risks & Public Control

webinar

and

open house

5 March, 2021

online

Potential and (im)possibilities for financing of new nuclear power builds

- Under what (kind of) policy frameworks & schemes?
- Within what conditions and at what (project) risks?

Outline

- 1) Costs structure of implementing NPPs in general & its implications;
- 2) Contributing factors to effective financing;
- 3) Rough overview of financing models already employed & debated;
- 4) Quick overview of projects in Europe (under construction and planned) & their financing;
- 5) Nuclear power industry discussion and proposals on feasible financing models for planned new builds;
- 6) Remarks on those proposals, their elements and the discussion.

Lenders' perspective

*„**Long-term promises** face skepticism and doubt.”*

*„Favorable financing is very important to nuclear power station economics” but „such schemes are very dependent on the **project’s risk profile**”.*

Acknowledged conditions and contributing factors

„Whole myriad of challenges” from first concrete to grid connection → Investors need to be convinced the risk is worth taking at a reasonable rate.

- deregulated power market where risk perception is key;
- lack of design maturity (of reactors);
- project management too slow;
- mainly first-of-a-kind (FOAK) projects (in OECD countries);
- a gap of 25 years (in Europe)
 - safety regulation not always very stable or predictable [factored in to a lesser extent];
 - fixing failures within industry itself → trial and error for regulators, operators and technicians.

Cost of capital → special arrangements

Cost of capital (very high) → major impact on LCOE from NPPs



Risk premium



Allocation of risks
(construction, market, legal etc....)



Financial and organizational arrangements
(financing model +ownership +other)

Profile of costs (generic) of NPPs

- **Capital costs** (CapEx) – very high (proportionately and in absolute terms);
 - **Operating costs** (OpEx) – relatively low (proportionately; but conditional);
 - Operating lifetime – relatively very long (as for gen-III(+) reactors) (designed & touted: 60-years; not yet tested, with more risks and higher external costs);
- **Whole life-cycle span** of NPPs
(from ordering through construction, operation phases to possible completion of decommissioning works)
even longer (than a century)
& broader in scope (+ „unexpected” events, liability consequences, etc.).

Financing structures and market and construction risk allocation for recent nuclear new-build projects

	Status	FOAK	Structure of financing			Allocation of market risks			Allocation of construction risks			Debt guarantee
			Corporate finance	Project finance	Hybrid model	Consumers	Taxpayers	Utility	Consumers	Utility/developer	Vendor	
Olkiluoto 3	Under construction	Yes			x	O				O	C	French ECA
Flamanville 3	Under construction	Yes	x					O		O	C	None
Taishan 1&2	In operation	Yes		x		R			R*			None
Vogtle 3&4	Under construction	Yes		x		R	R		R		C	US federal guarantee
VC Summer 2&3	Cancelled during construction	Yes		x		R	R		R		C	US federal guarantee
South Texas 3&4	Cancelled before construction start	Yes		x		C				O	C	None
Hinkley Point C	Under construction	Yes		x		C				O		UK government
Wylfa Newydd	Suspended before construction start	Yes		x		C				O		Japanese ECA

Source: NEA, 2020

- „Trust and confidence to the market” ...
- „a level playing field for low-carbon technology through taxonomies” ...

Only with the above, the nuclear industry can receive „support for green financing and making [NPP builds] an investable asset class” [and thus have chance to profit from it].

Creative (innovative) financing model

or

commitment of the public authorities

?

Financing models already employed & debated (overview)

- Government and corporate (private) finance
- on the balance sheet
- project finance
- Investor / cooperative financing
- CfD, RAB...

Farther issues

not to be overlooked

- At what costs, when... etc. ?
- Will they impact transparency (various areas)?
In what way(s)?
- Will they impact public participation and democracy (various areas)? In what way(s), to what degree?
- With what other (societal, environmental, proliferation etc.) impacts and risks?